myomectomy is so low, though it must be admitted that the factor of "cardiac failure" after this operation is one to be taken into account, especially in stout, flabby subjects.—H. C. C.]

OTOLOGY.

UNDER THE CHARGE OF

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The Influence of the Radical Mastoid Operation upon the Hearing.—DR. EDWARD BUHE (*Archiv für Ohrenheilkunde*, Band lvi., Hefte 3 und 4) reports from Schwartze's clinic the functional results of the radical operation in 103 cases. Of these 103 cases, 35 were improved in hearing, 37 remained the same as before the operation, and 31 were made worse. Per centum thus is: improved, 34 per cent.; remaining the same, 36 per cent.; made worse, 30 per cent. The whispered voice, that produced with the residue of air in the lungs after expiration, of a strength audible to an individual with normal hearing, 6 to 7 m., was used in testing the hearing in these cases.

From an analysis of these cases Buhe concludes:

1. The hearing after a radical operation will be found to be improved or remain the same when the labyrinth and labyrinth wall are intact, the hearing for the whispered voice before operation being less than 1 m.

2. The hearing will be improved when there is before the operation an obstruction which wholly occludes the external auditory canal.

3. The hearing will be improved or remain the same if before operation the labyrinth or labyrinth wall, or both, are diseased, there being before the operation only a small remnant of hearing.

4. There will be a decrease in the hearing when before operation the whispered voice is heard over 1 m.

5. Moreover, there will be a decrease in the hearing when the labyrinth or labyrinth wall, or both, are diseased, the hearing before operation being for whispered voice more than 0.25 m. and under 1 m.

Investigations in Regard to Caries of the Ossicles.—SCHULTZE (*Archiv für Ohrenheilkunde*, Band lx., Hefte 3 und 4) reports in detail the histological appearances of the ossicles removed from twenty-four patients. With one exception the ossicles were obtained by the radical operation. Twenty-two hammers and seventeen anvils were examined. In ten cases cholesteatomata were found in the middle ear, and in fourteen cases there were caries and granulation formation in the middle ear. The appearance of the membrana tympani before the

operation of these cases supported the truth of the diagnostic sign first brought out by Schwartze, that the site of the perforation in the upper segment of the membrana points to incus or malleus caries. The size of the perforation in the membrana gives no clue to the amount of destruction which the ossicles have suffered.

Schultze divides the pathological changes which the ossicles exhibit into two classes. In cases of the first class the diseased portion of the ossicles is on the surface and uncovered. In cases of the second class the bone change is observed beneath more or less pathologically changed tissue. In both classes the pathological process is lacunar absorption, and the covering of the carious portion with granulations, polypi, or epidermis is simply an accompaniment of the process. That the caries may come about with intact periosteum the author doubts, although the caries may start at the surface as a small point, and, as the process extends more deeply into the substance of the bone, it may become larger, and connected with the surface only by a narrow tract. The occurrence of primary osteomyelitis of the ossicles the author considers unverified. The caries is practically always secondary to a periostitis, the result of middle-ear suppuration. Loss of substance, however, may be due to pressure, as has been observed on the malleus head, where a very retracted drum membrane causes the head to press on the bony wall of the attic.

The most important immediate factor in the causation of the caries is the influence of the retained and fetid pus bathing the ossicles. This is often, although not always, associated with cholesteatoma formation in the middle ear. The immunity of the articulating surfaces of the ossicles is probably dependent upon the greater resistance of the cartilaginous coverings of these parts of the bones.

In conclusion, the author discusses the worth of ossiculectomy, and concludes that this operation is indicated in many cases, both because it often removes the focus of suppuration, and because it allows a more adequate drainage of the middle ear. The indications for ossiculectomy are, however, sharply defined, and the operation is not indicated where there is evident, in addition to the caries of the ossicles, caries of the antrum, etc., or cholesteatoma formation. Here the total exenteration of all the middle-ear cavities is indicated. The author is not in favor of leaving the ossicles intact in performing the radical operation.

Ankylosis of the Malleoincudal Joint.—FREY (*Archiv für Ohrenheilkunde*, Band lxi., S. 234–246) reviews thirty-five cases of ankylosis of the malleoincudal joint which he found in the literature on the subject. He then gave a brief clinical and histological history of two cases:

Case I. Boy, aged eleven years, had suffered with chronic otitis media for the last five years. The drumhead, with the exception of a small upper edge, was completely destroyed. The handle of the malleus lay on the inner wall of the middle ear, and the tympanum itself was filled with granulations which also surrounded the handle of the malleus. After long conservative treatment without results the radical operation was performed. At the operation the whole middle ear, as well as the mastoid, was found to be filled with granulations and pus. The bone of the mastoid was brittle. In enlarging the middle ear the malleus and incus were firmly attached and came out together.